Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the above-identified application.

Listing of Claims

1. **(Currently amended)** A method for accessing data from an enterprise data system via voice input, comprising:

authenticating a login, wherein the authenticating comprises:

querying a database with a voice identifier,

in response to the querying, verifying the voice identifier and receiving a password for the enterprise data system from the database, and

establishing a connection with the enterprise data system using the password for the enterprise data system;

enabling access to a domain of the enterprise data system, wherein each of a plurality of domains of the enterprise data system corresponds to a respective object or type of data;

receiving a spoken language query to be performed against data stored in the accessed domain ;

converting the spoken language query into a data query and executing the data query to retrieve data that corresponds to the query in the accessed domain; and

providing feedback data corresponding to data retrieved from the accessed domain in a verbal format, wherein the providing the feedback data comprises:

performing a text-to-speech conversion on retrieved data to generate audio data; and

interspersing the audio data with waveform data of prompts to generate a verbalized system response.

2. (Previously presented) The method of claim 1, wherein the data query includes reference to a unique enterprise data system user identifier such that the data query returns user-specific data.

3. (Previously presented) The method of claim 1, wherein the login comprises a unique user identifier and a personal identification number (PIN).

4. (**Currently amended**) The method of claim 1, further comprising:

converting the spoken language query into a data request in an application-readable form;

identifying one or more objects and data criteria corresponding **to** the spoken language query by processing the data request; and

formulating the data query based on the identified objects and data criteria.

5. (Previously presented) The method of claim 4, wherein the enterprise data system includes an object manager and data manager that are used to enable access to data stored in an enterprise database, further comprising:

passing information corresponding to the identified objects and data criteria to the object manager;

formulating a database query based on the objects and data criteria passed to the object manager in consideration of enterprise database schema information available to the data manager;

submitting the database query to the enterprise database;

receiving a result set back from the enterprise database in response to the database query; and

processing the result set to produce the feedback data.

6. (Previously presented) The method of claim 5, further comprising:

extracting object data from the result set; and

defining a slotted data string corresponding to a grammatical form in which data are to be presented;

embedding the object data into slots in the slotted data string to produce the feedback data.

7. (Previously presented) The method of claim 1, wherein converting the spoken language query into the data query comprises:

receiving voice input as digital waveform data;

passing the digital waveform data to a voice recognition component;

receiving application-readable data from the voice recognition component corresponding to the spoken language query; and

processing the application-readable data to identify data to be retrieved.

8. (Previously presented) The method of claim 1, further comprising:

defining a grammar syntax language comprising a plurality of grammars specifying grammatical formatting of legal inputs; and

identifying data to be retrieved by processing voice input in consideration of the grammar syntax language.

9. (Previously presented) The method of claim 1, wherein providing feedback data corresponding to data retrieved from the enterprise data system in a verbal format comprises:

defining a slotted data string corresponding to a grammatical form in which data are to be presented;

embedding data retrieved from the enterprise data system in slots defined in the slotted data string to form an embedded data text string;

passing the embedded data text string to a text-to-speech conversion component;

receiving digital waveform data from the text-to-speech conversion component corresponding to the embedded data text string;

streaming the digital waveform data to a device that produces an audible sound in response to processing the digital waveform data to produce a verbalized feedback.

10. (Previously presented) The method of claim 9, wherein a plurality of slotted data strings are defined, each corresponding to a respective system response, further comprising:

determining a current navigation context; and

selecting an appropriate slotted data string from among the plurality of slotted data strings based, at least in part, on the current navigation context.

11. (Previously presented) The method of claim 9, wherein a plurality of slotted data strings are defined, each corresponding to a respective system response, further comprising:

identifying attributes corresponding to data retrieved from the enterprise data system; and

selecting an appropriate slotted data string from among the plurality of slotted data strings based, at least in part, on the identified attributes.

12. (Previously presented) The method of claim 1, wherein providing feedback data corresponding to data retrieved from the enterprise data system in a verbal format comprises:

storing a plurality of prompt audio files, each comprising prompt digital waveform data that when processed produces a verbalized prompt comprising one or more words;

defining a slotted data string specifying a grammatical form in which data are to be presented by identifying prompt audio files to be streamed and specifying where data are to be inserted relative to the identified prompt audio files;

passing data retrieved from the enterprise data system to a text-to-speech conversion component;

receiving text-to-speech (TTS) digital waveform data from the text-to-speech conversion component in response to the passing;

streaming prompt digital waveform data retrieved from the identified prompt audio files and the TTS digital waveform data to a device that produces an audible sound in response to the retrieved prompt digital waveform data and the TTS digital waveform data to produce a verbalized feedback, wherein the streaming is performed according to an order defined by the slotted data string.

13. (Previously presented) The method of claim 12, wherein a plurality of slotted data strings are defined, each corresponding to a respective system response, further comprising:

determining a current navigation context; and

selecting an appropriate slotted data string from among the plurality of slotted data strings based, at least in part, on the current navigation context.

14. (Previously presented) The method of claim 12, wherein a plurality of slotted data strings are defined, each corresponding to a respective system response, further comprising:

identifying attributes corresponding to data retrieved from the enterprise data system; and

selecting an appropriate slotted data string from among the plurality of slotted data strings based, at least in part, on the identified attributes.

15. (**Currently amended**) A method for accessing an enterprise data system via a voice communications device, comprising:

enabling a communications connection to a voice access system;

authenticating a login through the communications connection using a user identifier, wherein the authenticating comprises:

querying a database with the user identifier, and

in response to the querying, verifying the user identifier and receiving from the database an enterprise data system log-in data comprising a password for the enterprise data system;

automatically logging into the enterprise data system using the enterprise data system log-in data;

enabling access to a domain of the enterprise system after the logging into the enterprise data system, each of a plurality of domains corresponding to a respective object or type of data;

enabling a request that a query be performed against data stored by the accessed domain using a spoken language query;

converting the spoken language query into a data query and executing the data query to retrieve data that corresponds to the query in the accessed domain;

providing feedback data corresponding to data retrieved from the accessed domain in a verbal format via the communications connection, wherein the providing the feedback data comprises:

performing a text-to-speech conversion on retrieved data to generate audio data; and

interspersing the audio data with waveform data of prompts to generate a verbalized system response.

16. (Previously presented) The method of claim 15, wherein the voice communications device comprises a telephone, and the authenticating comprises:

verifying a user identifier and a personal identification number (PIN) received from the telephone through the communications connection.

17. **(Currently amended)** The method of claim 15, further comprising:

converting the spoken language query into a data request in an application-readable form;

processing the data request to identify one or more objects and data selection criteria corresponding **to** the spoken language query; and

formulating the data query based on identified objects and data selection criteria.

18. (Previously presented) The method of claim 17, wherein the enterprise data system includes an object manager and data manager that are used to enable access to data stored in an enterprise database, the method further comprising:

passing information corresponding to identified objects and data selection criteria to the object manager;

formulating a database query based on the objects and data selection criteria passed to the object manager in consideration of enterprise database schema information available to the data manager;

submitting the database query to the enterprise database; and

receiving a result set back from the enterprise database in response to the database query.

19. (Previously presented) The method of claim 18, wherein use of the object manager and data manager abstracts objects from how data corresponding to the objects are stored in the enterprise database such that a schema of the enterprise database is changeable without requiring changes to a voice access system component that is external to the enterprise data system.

20. (Previously presented) The method of claim 15, further comprising:

retrieving data pertaining to a selected object from the enterprise data system through use of the user identifier upon login to the voice access system; and

providing feedback data corresponding to data that are retrieved in a verbal format via the communications connection.

21. (**Currently amended**) A method for accessing an enterprise data system via a telephone, comprising:

enabling a telephone connection to a voice access system;

authenticating the telephone connection using a user identifier, wherein the authenticating comprises:

querying a database with the user identifier, and

in response to the querying, verifying the user identifier and receiving from the database an enterprise data system log-in data comprising a password for the enterprise data system;

automatically logging into the enterprise data system using the enterprise data system log-in data;

providing a voice user interface that enables:

access to a plurality of domains, and

navigation and querying of data from an accessed domain using spoken navigation and spoken query commands, wherein each of a plurality of domains comprises data corresponding to a respective type of object in the enterprise data system; and

providing feedback data in a verbal format via the telephone connection in response to spoken navigation and spoken query commands, wherein the providing the feedback data comprises:

performing a text-to-speech conversion on retrieved data to generate audio data; and

interspersing the audio data with waveform data of prompts to generate a verbalized system response.

~~the feedback data including:~~

~~data corresponding to data retrieved from the accessed domain in response to the spoken query commands, and~~

~~system prompts in response to the spoken navigation commands.~~

22. (Previously presented) The method of claim 21, wherein the voice user interface includes a set of global voice commands that enables a jump from a current domain to a new domain.

23. (Previously presented) The method of claim 21, wherein the voice user interface includes voice commands that are context sensitive to a current navigation context, the method further comprising:

enabling navigation to another navigation context from a current navigation context using navigation voice commands that are based, at least in part, on the current navigation context.

24. (Previously presented) The method of claim 21, further comprising:

generating a data query to retrieve data from the enterprise data system in response to one of more of the spoken query commands; returning a plurality of data sets in response to the data query; and

enabling browsing of the plurality of data sets using verbal input.

25. (Previously presented) The method of claim 21, further comprising:

maintaining navigation tracking information for that identifies previous navigation locations; and

selecting system prompts based on the navigation tracking information for a user such that the user is presented with a different system prompt if the user has not previously navigated to a current navigation location than the user is presented with if the user has previously navigated to the current navigation location.

26. (Previously presented) The method of claim 21, wherein the spoken navigation and spoken query commands includes a query which comprises a request to retrieve data corresponding to a domain a user is currently in that is provided to the enterprise data system and returns a plurality of data sets comprising header data identifying items pertaining to the current domain, the method further comprising:

enabling the user to browse the header data on an item-by-item basis using verbal navigation commands; and

reading the header data corresponding to each item in response to a user navigation to that item.

27. (Previously presented) The method of claim 26, further comprising:
enabling the user to request detail information corresponding to an item that is currently being browsed;
retrieving detail information corresponding to the item currently being browsed from the enterprise database; and
reading the detail information to the user via the telephone connection.

28 - 34. (Cancelled)

35. (Previously presented) The method of claim 1, further comprising:
enabling navigation in the accessed domain through spoken navigation commands.

36. (Previously presented) The method of claim 15, further comprising:
enabling navigation in the accessed domain using spoken navigation commands.

37. (Previously presented) The method of claim 16, wherein the verifying comprises:
if the user identifier was input in a verbal form, verifying a verbal form user identifier;
if the user identifier was input via a keypad on the telephone, verifying a tone form user identifier;
if the PIN was input in a verbal form, verifying a verbal form PIN; and
if the PIN was input keypad on the telephone, verifying a tone form PIN.

38. (**Currently amended**) A system comprising:

an authentication circuit coupled to a database and configured to authenticate a login by:

querying the database with a voice identifier, and

in response to the querying, verifying the voice identifier and receiving a password for an enterprise data system from the database;

a connection circuit configured to establish a connection with the enterprise data system using the password for the enterprise data system;

an interface configured to access to a domain of the enterprise data system, wherein each of a plurality of domains of the enterprise data system corresponds to a respective object or type of data;

a query circuit configured to receive a spoken language query to be performed against data stored in the accessed domain;

a retrieval circuit configured to convert the spoken language query into a data query and execute the data query to retrieve data that corresponds to the query in the accessed domain; and

a responder circuit configured to provide data corresponding to the retrieved data in a verbal format by:

performing a text-to-speech conversion on retrieved data to generate audio data; and

interspersing the audio data with waveform data of prompts to generate a verbalized system response.

39. (Canceled)

40. **(Currently amended)** A computer readable medium comprising instructions executable on a processor, wherein the instructions are operable to implement each of:

authenticating a login, wherein the authenticating comprises:

querying a database with a voice identifier;

in response to the querying, verifying the voice identifier and receiving a password for an enterprise data system from the database; and

establishing a connection with the enterprise data system using the password for the enterprise data system;

enabling access to a domain of the enterprise data system, wherein each of a plurality of domains of the enterprise data system corresponds to a respective object or type of data;

receiving a spoken language query to be performed against data stored in the accessed domain;

converting the spoken language query into a data query and executing the data query to retrieve data that corresponds to the query in the accessed domain; and

providing feedback data corresponding to data retrieved from the accessed domain in a verbal format, wherein the providing the feedback data comprises:

performing a text-to-speech conversion on retrieved data to generate audio data; and

interspersing the audio data with waveform data of prompts to generate a verbalized system response.

41. (Canceled)